

36. (Amended) The method of claim 33, wherein actuating the Y-direction linear motor to position the support platform in the Y-direction occurs as the article is being exposed.

REMARKS

Applicants submit this Amendment, accompanied by an Appendix and Request for Approval of Drawing Change, in reply to the Office Action mailed February 27, 2003.

In this Amendment, Applicants amend the specification and claims to improve clarity.

Before entry of this Amendment, claims 1-36 were pending in this application. After entry of this Amendment, claims 1-36 remain pending in this application.

The originally-filed specification, claims, abstract, and drawings fully support the amendments to the specification and claims. No new matter was introduced.

In the Office Action, the Examiner objected to the drawings for failing to comply with 37 C.F.R. 1.84(p)(5); rejected claims 1, 8, 10-12, 15, 16, 19-21, and 33 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No 5,040,431 to Sakino et al. ("Sakino"); and rejected claims 2-7, 9, 13, 14, 17, 18, 22-32, and 34-36 under 35 U.S.C. § 103(a) as being unpatentable over Sakino in view of U.S. Patent No. 5,149,967 to Otaka ("Otaka").

Applicants respectfully traverse the Examiner's rejections.

Drawings

Applicants respectfully submit that the Request for Approval of Drawing Change filed herewith obviates the Examiner's objection to the drawings.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Rejection Under 35 U.S.C. § 102(b)

Applicants respectfully request the Examiner to withdraw the claim rejections based on Sakino.

For anticipation under 35 U.S.C. § 102, the reference must teach every aspect of the claimed invention either explicitly or implicitly. See M.P.E.P. 706.02.

With respect to claim 1, Sakino, does not disclose all of the recited elements of this claim, including “a slide attached to the support platform and slidably engaged with the X-member and the Y-member”

In particular, if the X stage movable member 5 of Sakino corresponded to the “support platform” of claim 1, as the Examiner suggests, then the “support platform” of Sakino would not be slidably engaged with the X-member. Instead, the “support platform” of Sakino would be rigidly fixed to the X-member 5, as they are one in the same. See Sakino, col. 3, line 60, to col. 4, line 25, and Figs. 1-3.

Additionally, Sakino does not teach, disclose, or suggest using “an X-member coupled to . . . the support platform to move the support platform in an X-direction along a Y-member, wherein the Y-member is coupled to the . . . support platform to move the support platform in a Y-direction along the X-member,” as recited in claim 1. In particular, Sakino does not disclose an X-member and a Y-member that both move the support platform.

Accordingly, Applicants respectfully request that the rejection of claim 1—and claims 8, 10-12, 15, 16, and 19-21, which depend therefrom—be withdrawn.

With respect to claim 33, Sakino does not disclose all of the recited elements of this claim, including a “support platform [that] is attached to a slide that is slidably engaged with an

X-member and a Y-member” As discussed above, the movable member 5 of Sakino is not slidably engaged with both an X-member and a Y-member, only a Y-member.

Accordingly, Applicants respectfully request that the rejection of claim 33 also be withdrawn.

Rejection Under 35 U.S.C. § 103(a)

Applicants respectfully request the Examiner to withdraw the claim rejection based on Sakino in view of Otaka.

To establish a prima facie case of obviousness using multiple references: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art references, when combined, must teach or suggest all the claim limitations. M.P.E.P. 2143.

With respect to claims 1 and 22, Applicants respectfully submit that none of Sakani, Otaka, and the other art of record, taken alone or in any proper combination, discloses all of the recited elements of claims 1 and 22, including “a slide attached to the support platform and slidably engaged with the X-member and the Y-member.”

With respect to claim 33, Applicants respectfully submit that none of Sakani, Otaka, and the other art of record, taken alone or in any proper combination, discloses all of the recited elements of claim 33, including a “support platform [that] is attached to a slide that is slidably engaged with an X-member and a Y-member”

Accordingly, Applicants respectfully request that the rejection of claims 22 and 3-7, 9, 13, 14, 17, 18, 23-32, and 34-36, which depend from one of claims 1, 22, and 33, be withdrawn.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Claim Scope

In discussing the specification, claims, abstract, and drawings in this Amendment, it is to be understood that Applicants are in no way intending to limit the scope of the claims to any exemplary embodiments described in the specification or abstract and/or shown in the drawings. Rather, Applicants believe that Applicants are entitled to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation, and applicable case law.

Summary


Applicants submit that the present application should be in condition for allowance. If a conversation might advance prosecution, the Examiner is invited to call the undersigned (202-408-4157).

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

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By: 
Michael L. Woods
Reg. No. 50,811

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

APPENDIX

Applicants submit the following requested changes to the specification and claims with brackets and underlining for the Examiner's convenience as required by 37 C.F.R. §§ 1.121(b)(1)(iii) and (c)(1)(ii). This Appendix is not intended to be entered into the application.

Amendments to the Specification:

Please amend the specification, as follows:

Page 6, lines 3-16, please amend the paragraph, as follows:

The positional stage of the invention is designed to minimize the movement of these magnetic components during the exposure of the article. In one embodiment, the support platform is moved in [a] the X-direction while the electron beam is deflected away or shielded from the article. One method of shielding the article from the electron beam is to use a blanking device that turns off the beam. Alternatively, a shutter device could be placed between the beam and the article to block the beam. As the support platform moves with the X-member, the electromagnetic coils associated with the X-direction linear motors also move. However, because the article is not being exposed during this time, the movement of the electromagnetic coils and/or any other magnetic materials have no effect on exposure performance. Also, because the article is not exposed by the electron beam as the stage is moved in the X-direction,

low precision bearings not designed for fine and smooth movement may be used to facilitate positioning of the stage in the X-direction.

Page 16, lines 16-27, please amend the paragraph, as follows:

A reaction force [cancelling] canceling technique using a reaction frame is shown in Fig.

7. Frame 22 is flexibly attached to the main system structure (not shown). This allows for some small movement of the frame and stage, so that reactive forces applied from the [magent] magnet tracks 46, 76 of the stage motor, which cause small movements of the stage frame 22, do not transmit through the frame 22 directly to the main system structure. Frame 22 is held in place partly by rods 201, which in turn are connected to block 202. Block 202 is connected to ground 211. A seal or flexible bellows 203 is used to prevent leakage around rod 201. Additional rods 204, 205 are used to secure the frame 22. Rods 204, 205 are also attached to ground blocks (not shown) similar to 202. The reaction forces from the motors are thus grounded resulting in minimal disturbance to the main system structure.

Page 16, line 28, to page 17, line 9, please amend the paragraph, as follows:

A mass counter balance or counter mass device is shown in Fig. 8. In this embodiment, magnet track 46 is flexibly mounted using a flexure or other type of bearing to frame 22, allowing for a small movement of the magnet track relative to frame 22. The magnet track is connected to a counter mass 208, through rod 207 and attachment block 206. Counter mass 208 is

attached to ground **211** using a bearing **209**. If the counter mass is outside the stage vacuum chamber (not shown), then seal **212** is used to prevent leakage of air into the vacuum chamber. A small motor **210** or spring can be used to keep the counter mass within its normal operating range. A similar counter mass is provided for each of the magnet tracks **46, 76** so that substantially all reaction forces are absorbed and reduced. The counter mass system provides superior reaction force [cancelling] canceling compared to the reaction frame, but at a higher cost, size and complexity.

Amendments to the Claims:

Please amend claims 35 and 36, as follows:

35. (Amended) The method of claim 33, wherein actuating the X-direction linear motor to position the support platform in the X-direction [occurs] occurs as the article is not being exposed.

36. (Amended) The method of claim 33, wherein actuating the Y-direction linear motor to position the support platform in the Y-direction [occurs] occurs as the article is being exposed.

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